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ABSTRACT

In the fall of 1974, a teacher preparation project for community college vocational/technical teachers in Texas was initiated by the Texas Education Agency and resulted in the creation of a systems approach model for planning, developing, and implementing instruction that might be adapted to all instructional and training programs. Based on the approach used by the United States Air Force in training vocational/technical personnel, the model involves four steps. The first step identifies the occupation and inventories the tasks involved in order to ascertain what a person must know and be able to do to have entry skills for that particular occupation. The second step represents the first major decision in planning and developing the instructional system; the instructor, using personal experience, occupational analysis results, and advisory group recommendations, specifies course/program content. Step three, the core of the system, involves students in activities based on individual differences and develops instructional objectives. Beginning with the task inventory, desired behavioral outcomes are identified, criterion objectives written, activities developed, and assessment procedures constructed. The final step includes follow-up and evaluation accomplished in a variety of ways of which graduate surveys is perhaps the best. Adjustments in objectives can be made from this type of feedback. (TR)

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A SYSTEMS MODEL FOR PLANNING VOCATIONAL-TECHNICAL EDUCATION

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U.S. DEPARTMENT OF HEALTH,
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EDUCATION

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With the recent emphasis on competency based teacher education, many approaches to education planning are being developed. An umbrella category has emerged which encompasses these many approaches to curriculum and instructional development. The encompassing term is commonly referred to as the "Systems Approach to Educational Planning." This approach is making sense to many planners of vocational instruction because it requires a methodology for the orderly development and evaluation of instructional programs in the vocational area. Vocational personnel have traditionally approached the task of curriculum planning and development in a logical and organized manner; that is, systematically. Being systematic, however, is not the same thing as using a systems approach. Even though systems can be used for many purposes in education, such as planning of programs or classroom instruction, a system will always have three major components. These components are what distinguish a "system" from "systematic" planning. Any system will, first of all, focus upon a set of objectives--ends to be achieved. Second, a system provides

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a means for the objectives to be reached; and third, a system requires an evaluation or feedback process to measure how well the objectives have been reached.

In education, there are many factors to be included in the design of an instructional system. Students and teachers are, of course, the two most obvious factors. However, support personnel, administrative policy, facilities, materials and equipment must also be considered and woven into the cloth out of which the learning environment is fashioned. In addition, teaching techniques, student learning styles, and evaluative procedures must be coordinated with the specified educational (learning or program) objectives. Identifying these factors and relating them properly and efficiently to one another can be a most confusing process. This is the purpose of a systems approach--not just an orderly procedure, but a highly effective way to give direction to the complex process of learning.

The process of applying the systems approach in vocational instruction has received careful attention and development by the United States Air Force. This system has been highly successful in the training of Air Force personnel in hundreds of vocational and technical areas. The Air Force model includes:

- (a) gathering and analyzing job performance requirements
- (b) translating job performance requirements into behaviorally stated learning objectives

- (c) identifying, developing, and integrating operating resources, instructional techniques, and procedures
- (d) assuming achievement of the behavioral objectives and confirming that these objectives fully support the job performance requirements.¹

The Air Force System was designed to support the specific goals of the Air Force program. As such, it needs modification to be adapted for other programs. In the fall of 1974, a teacher preparation project for community college vocational-technical teachers was initiated by the Texas Education Agency. The personnel involved in the project created a system for instructional development.

The model which emerged prescribed an approach to planning, developing and implementing instruction that might be adaptive to all instructional and training programs. However, it was found to be especially helpful in planning vocational and technical instruction.

¹Instructional System Development. Air Force Manual
50-2. (Washington, D.C.: Department of the Air Force, 1970),
p. 5.

MODEL FOR VOCATIONAL-TECHNICAL
INSTRUCTIONAL SYSTEM DEVELOPMENT (Figure 1)

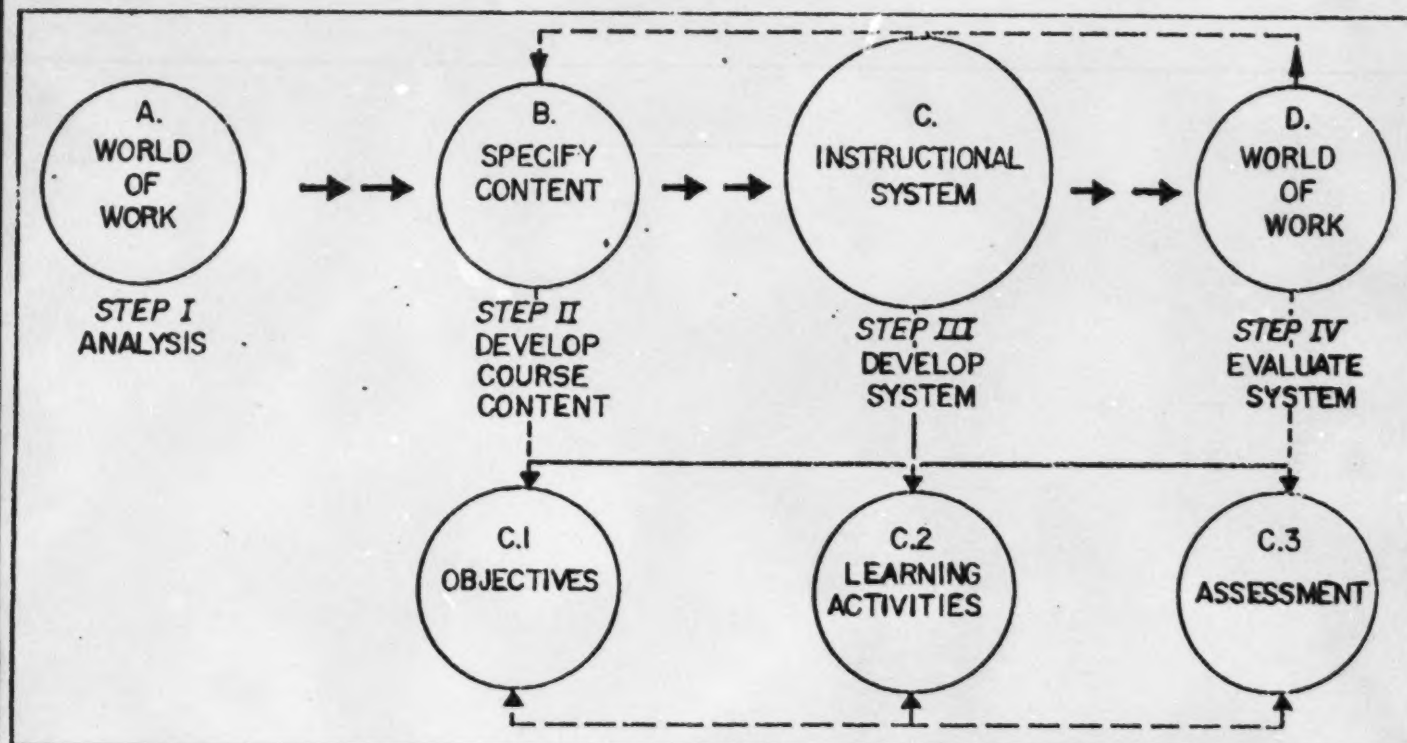


Figure 1 - Model for Vocational-Technical
Instructional System Development

A. The first step in this model is to identify the occupation and to inventory the tasks involved. This analysis based on "World of Work" experiences or observations, will also allow for identification of blocks and ordering of tasks. The objective here is to determine what a person must know and be able to do in order to have job entry skills for that particular occupation.

B. This step represents the first major decision required in planning and developing the instructional system. Based

on the occupational analysis and task inventory, decisions must be made as to what is to be taught. The instructor, using his own personal experience, the results of the occupational analysis, and the recommendations of the advisory groups, specifies the content for the course or program. This process results in a course outline of tasks and objectives that are sequenced in an instructional order.

C. The heart of the system is the process which involves the student in meaningful activities based on individual student differences.² This process begins with the development of the instructional objectives. Using the task inventory as a starting point, desired behavioral outcomes are identified, criterion objectives written, enabling activities developed, and assessment procedures are constructed.

A special word might be added here concerning criterion objectives. These are the objectives which specify (1) those behaviors desired as an end-product of instruction, (2) the conditions under which the behavior is to be demonstrated, and (3) the acceptable standard of performance. Enabling activities are created to help the student accomplish the objectives and thus demonstrate competency. Following the development of objectives and activities, criterion based assessments are constructed to evaluate student achievement of objectives and to prove the effectiveness of the instructional system.

²Haberman, Martin, and Stinneth, T.M., Teacher Education and the New Profession of Teaching, (Berkeley, California: McCutchan Publishing Corp., 1973), p. 98

D. The fourth step is one of follow-up and evaluation. This can be accomplished in a variety of ways. Perhaps one of the best is to contact the graduates of the program and ascertain if the instruction and training which they received match the job.³ Adjustments in the objectives can be made from this type of feedback.

Thus your system is complete; moving from the world of work in which you specify the content to be taught, and returning to the world of work to check whether learning was realistic in terms of job and skill requirements. This model shows a systematic attempt to structure teaching and learning around specifically stated objectives and a process to maximize the student's successful demonstration of competency. Any model is effective only if it produces the desired behavioral change in pre-determined ways and provides feedback at all points.⁴

³Mager, Robert F. and Beach, Kenneth M. Jr., Developing Vocational Instruction, (Belmont, California: Fearson Publishers, 1968), p. 72.

⁴Roueche, John E., A Modest Proposal; Students Can Learn, (San Francisco: Jossey-Bass Inc., Publishers, 1972), p. 62.

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